IV.A.2.N.B. FACULTATIVELY DECIDUOUS SUBDESERT DWARF-SHRUBLAND

IV.A.2.N.b.2. ATRIPLEX CORRUGATA DWARF-SHRUBLAND ALLIANCE
Mat Saltbush Dwarf-shrubland Alliance

Alliance Identifier: A.1109
***Atriplex corrugata* Dwarf-shrubland**
Mat Saltbush Dwarf-shrubland

ELEMENT CONCEPT

GLOBAL SUMMARY: This dwarf-shrubland association is found on lower hillslopes, clay barrens and alkaline flats on Colorado Plateau portions of northwestern New Mexico, western Colorado and Utah. Sites are nearly flat to moderately steep and often resemble "badlands" because of high water and wind erosion: Soils are typically derived from Mancos Shale. They are moderately deep, strongly saline, moderately alkaline, fine-textured (clayey), poorly developed and typically have high erosion rates. The soil surface is mostly barren. The vegetation is characterized by a very sparse to moderate cover (5-30%) of woody vegetation that is dominated by the halophytic evergreen dwarf-shrub *Atriplex corrugata*. There is typically very low species diversity, but depending on soil salinity and moisture, other plants may be present, including the shrubs *Atriplex gardneri, Tetradymia spinosa, Picrothamnus desertorum (= Artemisia spinescens), Suaeda calceoliformis (= Suaeda depressa)*, and *Krascheninnikovia lanata*. The herbaceous layer is very sparse. Only scattered perennial forbs, such as *Xylorhiza glabriuscula, Xylorhiza venusta*, and *Sphaeralcea grossulariifolia*, and the perennial grasses *Achnatherum hymenoides (= Achnatherum hymenoides)* and *Elymus elymoides (=Sitanion hystrix)*, have been reported. Annuals are seasonally present and may include *Eriogonum inflatum, Plantago tweedyi*, and *Atriplex argentea*. Introduced species such as *Bromus tectorum* and *Salsola kali* are often present.

ENVIRONMENTAL DESCRIPTION

USFWS WETLAND SYSTEM: UPLAND

Ouray National Wildlife Refuge Environment: *Atriplex corrugata* Dwarf-shrubland vegetation grows on lower hillslopes, on clay soils that lie on 2-3% slopes and are subject to both sheet erosion by water and wind erosion. This results in plants that grow on the pedestals of soil protected beneath their canopy and held by their root system. Some soil cracks were evident, and at one site, white-tailed prairie dogs were digging at the base of saltbush shrubs, probably foraging for roots of *Elymus elymoides*.

Global Environment: This dwarf-shrubland association is found on lower hillslopes, clay barrens and alkaline flats on Colorado Plateau portions of northwestern New Mexico, western Colorado and Utah. Climate is semi-arid with most of the highly variable precipitation falling in July and August as high-intensity thunderstorms. Mean annual precipitation is approximately 23 cm. Elevation ranges from 1300-1820 m. Sites are nearly flat to moderately steep and often resemble "badlands" because of high water and wind erosion: Soils are typically derived from Mancos Shale. They are moderately deep, strongly saline, moderately alkaline, fine-textured (clayey), poorly developed and typically have high erosion rates. The soil surface is mostly barren. In the Badger Wash Basin of Colorado there is 25% *Atriplex corrugata*, 60% bare ground, 8% litter and 8% algal crusts (Branson et al. 1976).

VEGETATION DESCRIPTION

Ouray National Wildlife Refuge Vegetation: *Atriplex corrugata* Dwarf-shrubland is sparsely distributed on clay soils, providing less than 10% foliar cover in a given stand. Mat saltbush and Gardner saltbush are the most common species in each stand, other dwarf shrubs present include *Suaeda depressa, Artemisia spinescens, Tetradymia spinosa,* and *Xylorrhiza venusta*. All of these dwarf shrubs grow on small pedestals of soil that remain following erosion of adjacent soils. The only herbaceous plant species recorded were *Atriplex argentea* and *Elymus elymoides*, which occurred at less than 1% foliar cover. In one stand, herbaceous litter was present, and was identified as the remains of *Halogeton glomeratus*.

Global Vegetation: These shrublands are found on the lower slopes of shale outcrops and alkaline flats on the Colorado Plateau. Stands have very sparse to moderate cover (5-30%) of woody vegetation that is dominated by the halophytic evergreen dwarf-shrub *Atriplex corrugata*. Sparse stands are often solely dominated by this plant. Stands typically have very low species diversity. Depending on soil salinity and moisture, other plants may be present, including the shrubs *Atriplex gardneri, Tetradymia spinosa, Picrothamnus desertorum (= Artemisia spinescens), Suaeda calceoliformis (= Suaeda depressa)*, and *Krascheninnikovia lanata*. The herbaceous layer is very sparse.

Scattered perennial forbs, such as *Xylorhiza glabriuscula, Xylorhiza venusta*, and *Sphaeralcea grossulariifolia*, and the perennial grasses *Achnatherum hymenoides* and *Elymus elymoides*, have been reported. Annuals are seasonally present and may include *Eriogonum inflatum, Plantago tweedyi*, and *Atriplex argentea*. Introduced species include *Bromus tectorum, Halogeton glomeratus, Malcolmia africana*, and *Salsola kali*. Plants may be pedestaled because of high erosion on these sites.

Dynamics: *Atriplex corrugata*-dominated shrublands are the most saline-tolerant of the Mancos Shale plant communities studied by Branson et al. (1976). Although very slow-growing, *Atriplex corrugata* can completely dominate these extremely saline sites (Branson et al. 1976). It is a true evergreen dwarf-shrub retaining leaves for several years. This plant utilizes winter soil moisture, beginning new growth in March when the soils are relatively warm and moist. It flowers in April and by mid-July fruits are shattered (Branson et al. 1976). If the soils dry out in midsummer, it can go dormant until the late summer monsoon rains begin.

MOST ABUNDANT SPECIES

Ouray National Wildlife Refuge

Stratum	**Species**
DWARF SHRUB	*Atriplex corrugata, Atriplex gardneri*
HERBACEOUS	*Atriplex argentea, Elymus elymoides*

Global

Stratum	**Species**
DWARF SHRUB	*Atriplex corrugata*

CHARACTERISTIC SPECIES

Ouray National Wildlife Refuge

Species
Atriplex corrugata, Atriplex gardneri, Atriplex argentea

Global

Species
Atriplex corrugata

OTHER NOTEWORTHY SPECIES

Ouray National Wildlife Refuge

Stratum	**Species**
N/A	

Global

Stratum	**Species**
N/A	

OURAY NATIONAL WILDLIFE REFUGE SIMILAR ASSOCIATIONS: *Atriplex gardneri* Dwarf-shrubland is similar, but grows on erosion fans.

GLOBAL SIMILAR ASSOCIATIONS: N/A

SYNONYMY:
Mat saltbush association (Shantz 1925).
Atriplex corrugata Shrub Association (Baker 1984a).
Atriplex corrugata Shale Barren (Baker 1984a).
Atriplex confertifolia Plant Community (Branson et al. 1976).
Mat *Atriplex-Pleuraphis* Community (Dastrup 1963) I. This community includes two other species of *Atriplex* plus significant *Artemisia nova* cover.
Mat *Atriplex* Association (Graham 1937). This community includes two other species of *Atriplex* plus significant *Artemisia nova* cover.
Atriplex corrugata cover type (Collins 1984) referred to Branson 1966.
Mat saltbush vegetation type (Harper and Jaynes 1986) referred to Branson 1966.
Atripletum corrugatea (Ibrahim et al. 1972) referred to Branson 1966.
Mat Saltbush Community, Shrub Phase A3a (Romme et al. 1993) referred to Branson 1966.

Atriplex corrugata (Potter et al. 1985) occurs in saline low areas in Mancos Shale between knolls.
Atriplex corrugata cover type (Tuhy and MacMahon 1988) occurs in saline low areas in Mancos Shale between knolls.
Desert Shrub Habitat (U.S. Bureau of Reclamation 1976) occurs in saline low areas in Mancos Shale between knolls.
Mancos Shale (Welsh 1957) occurs in saline low areas in Mancos Shale between knolls.
Atriplex corrugata Habitat Type (West and Ibrahim 1968) occurs in saline low areas in Mancos Shale between knolls.

CLASSIFICATION COMMENTS

Ouray National Wildlife Refuge: (not available)

Global Comments: Vegetation cover in this association may vary greatly depending on soil chemistry and slope. Some stands should be classified as shrublands with 25-30% shrub cover (Branson et al. 1976, Potter et al. 1985). However, most stands are in the 3-20% shrub cover range and should be classified in a sparsely vegetated alliance (Harper and Jaynes 1986, Ibraham and West 1972, West and Ibraham 1968, Von Loh 2000). Further investigation is needed throughout its range to resolve this issue.

ELEMENT DISTRIBUTION

Ouray National Wildlife Refuge Range: *Atriplex corrugata* Dwarf-shrubland was observed only on clay barrens in the Wonsit Valley and just south of the Fish Hatchery complex.

Global Range: Shrublands in this association are found on lower hillslopes and alkaline flats on Colorado Plateau portions of northwestern New Mexico, western Colorado and Utah.

Nations: US
States/Provinces: CO UT
TNC Ecoregions: 10:C, 19:C
USFS Ecoregions: 341B:C?, 341C:CC, M341B:??
Federal Lands: USFWS (Ouray)

ELEMENT SOURCES

Identifier: CEGL001437 **Confidence:** 2 **Conservation Rank:** G5
REFERENCES: Baker 1984a, Branson 1966, Branson et al. 1967, Branson et al. 1976, Collins 1984, Dastrup 1963, Graham 1937, Harper and Jaynes 1986, Ibrahim et al. 1972, Lusby et al. 1963, Potter et al. 1985, Romme et al. 1993, Shantz 1925, Shute and West 1977, Tuhy and MacMahon 1988, U.S. Bureau of Reclamation 1976, Von Loh 2000, Welsh 1957, West and Ibrahim 1968.